DEPARTMENTAL INTERVIEWS

INDUSTRIAL ENGINEERING

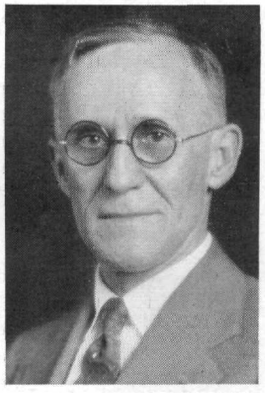
INDUSTRIAL Engineering offers to young freshmen engineers a chance to enter the practical side of engineering. If you like making things—manufacturing; if you like handling men; if you like the thought of managing a company; or, finally, if you like the thought of going into business for yourself—industrial engineering can help you.

We deal with the machine tools of production, with the cost of production and with the handling of men. Time study and motion study are essential parts of our curriculum.

There would seem to be a shortage of skilled industrial engineers, and our graduates are all placed in responsible engineering positions. There is a good demand for our undergraduates and there is every promise that this demand will continue.

JOHN YOUNGER.

CERAMIC ENGINEERING



THE demand for ceramic engineers today is for men thoroughly grounded in fundamentals, as well as being accurate, diligent and dependable. The great variety of ceramic industries provides a wide choice of occupation, ranging from theoretical research to mass production and from the crudest to the finest of products. Replacement of the old manual production methods by modern methods with precise control gives the young graduate a distinct advantage over older men who do not understand the newer processes or the control methods employed.

New products are demanded to meet new conditions and young men with modern training and knowledge are demanded for development in these fields. Ceramic plants built twenty years ago are being completely rebuilt and re-equipped. The reduced margin between production cost and market price leaves the manufacturer no alternative but to change with the times. In this change, the young ceramic engineer finds his opportunity. He must expect a strenuous life but also one filled with new and unique problems which respond to intelligent treatment and through their diversity never become tedious.

ARTHUR S. WATTS.

MINE ENGINEERING

MINING in its broad sense includes the removal from the earth, and at times the preliminary processing, of all economically valuable mineral products. This includes the metalliferous ores, the solid fuels (coal and lignite), the industrial minerals (non-metallic solids other than the fuels), and the liquids and gases which include crude oil, brines, natural gas, etc.

Because of the great variety of engineering problems the mining engineer must handle, his education must be broad yet thorough in engineering fundamentals. To these must be added a considerable knowledge of mineralogy and geology.

Our graduates have explored Venezuela for oil, they work in many oil fields of the U. S., they have searched for diamonds and copper in Africa, gold has lured them to Canada and Alaska, gold, copper, and coal have taken them to the heights of the Andes mountains of S. A. Platinum and gold production of Colombia is maintained by the help of mining graduates from Ohio State University. We find our boys in Mexico, China and all over the U. S.

The work of the department of Mine Engineering is to teach mining; meaning thereby the helping of young men to learn to apply engineering principles to the many and varied problems of mining. Our men must know rocks and ores, structural materials, stresses in structures, chemistry, steam and electrical power applications, mining methods, oil well drilling and production methods, ore dressing, and over and above all they must maintain sanitary conditions and provide for maximum safety and healthfulness of employees.

To help men prepare for the opportunities in this great field of mining, with the ever increasing complexity of its problems, is the work of the Department of Mine Engineering.

HARRY E. NOLD.

CHEMICAL ENGINEERING

CHEMICAL engineering is that branch of engineering which utilizes engineering principles, methods, design, operations and equipment in chemical processes or wherever chemistry is used or is of assistance in manufacturing. The work of the chemical engineer is concerned with the coordination and harnessing of phenomena and science for production and service, going into ultimate detail, if and when necessary, to guarantee production and performance.

The industries employing chemical engineers cover a widely diversified field: paint, varnishes, resins, rayon, petroleum, alkalies, chemicals, dyes, papers, rubber, lime, soap, by-product coke, coated fabrics, textiles, sugar, plastics, and many others.

The chemical engineer's work is based upon a thorough knowledge of the chemical engineering operations as heat transfer, distillation, evaporation, drying, etc., as carried out on a manufacturing scale; mathematics; physics; economics; mechanics; drawing; and all branches of chemistry.

JAMES R. WITHROW.

ELECTRICAL ENGINEERING

STUDENTS looking forward to careers in engineering should do so with confidence and enthusiasm. The same might be said to students looking forward in any career. However, it is true that engineering students have selected a field which is in the foreground of the picture of modern civilization. Modern civilization is an industrial civilization, and industry is built on the application of materials and forces of nature to the purpose of man. Engineering industry is woven into the warp and woof of modern civilization and will endure as long as that civilization endures.

Schools of engineering are set up to prepare young men for life and careers in the field of engineering and industry. After long and mature and repeated considerations they have evolved courses of study which in their judgment best fit students to undertake their careers. It may not be known to all students in engineering, but recently the Engineers Council for Professional Development has inspected most of the engineering departments of the country and has judged some worthy and others unworthy of undertaking this task of preparing students for engineering careers. We are happy here at Ohio State to be able to say that all the strictly engineering curricula have been approved by this accrediting agency.

While the various departments have thus set up approved curricula, they also realize that students must round out their preparation for life and careers by activities outside their strictly curricular responsibilities. By this we mean, in any university there are many opportunities of which students in engineering should avail themselves in preparation for the future. The very largeness of the institution is a definite asset rather than a handicap in this regard.

These extra-curricular advantages and opportunities consist of lectures, concerts, libraries, museums, but most of all the advantages of associating for four years with other individuals of similar age, inclinations and outlook, and for developing facility in cooperation and personal adjustment with our fellows. These advantages are to be gained by throwing ourselves into both informal and organized activities.

In engineering in particular are there excellent opportunities for development of personality in this way. The departmental student societies present opportunities which should be snapped up eagerly. These societies consist of groups of students who are arranging their own affairs in an educational endeavor. The activities require leadership, personality, tact, cooperation and organization. All students should, therefore, support their departmental professional societies by joining and by participation.

EDWIN E. DREESE.

METALLURGY

METALLURGY is primarily the application of Chemistry and Physics to the industries which produce and treat metals, consequently, students in Metallurgical Engineering are engaged in the study of principles and techniques of Chemistry and Physics, as they are useful in the laboratory of the metallurgical industry and as they help to understand and control the plant operations. Of course, the design of the equipment, the economics of the operations and similar engineering studies are also essential parts of the curriculum.

The early graduates of this curriculum are some of the best known metallurgical engineers and metallurgists in the country and scarcely a steel plant in the state now is operating without the guidance of an Ohio State graduate. The result of this has been that during the depression, the department has been able to find employment for its men, and during the last few years has not been able to supply the demand for graduates.

DANA J. DEMOREST.

ARCHITECTURE

AT the close of their academic year of 1937-38, many freshmen in the engineering college have yet the problem of determining the particular curriculum which they will elect to follow as sophomores. Several factors must be considered in choosing a life work and too often question of probable financial reward is the determining factor.

Nothing is more productive of unhappiness than working, day after day, at a job one does not like. If then, you find joy in creative work, if you desire to be of the greatest possible service to society, and if, in a word, your interest is in architecture, do not let any other factor determine your choice.

For those not gifted with an artistic sense, there is the great field of construction for which particular options in architectural engineering are offered. Many of our graduates have gone into the field of contracting. For those of artistic inclination, it is well to recall the definition of architecture as the most useful of the fine arts and the finest of the useful arts.

The department of architecture extends greetings to you who are about to become sophomores and asks your consideration, in choosing a life work, of a great creative profession—that of architecture.

CHARLES ST. JOHN CHUBB.

ENGINEERING OR APPLIED PHYSICS

AS our knowledge of physical phenomena has expanded and clarified, the applications of physics to industry and daily life have continuously multiplied. The answers to the questions in which the industrial laboratories are interested require a thorough knowledge of physics and chemistry with a sufficient understanding of engineering to insure that the methods characteristic of physical research can be effectively applied to engineering problems. For this reason industrial laboratories offer almost limitless possibilities for physical and chemical research. Indeed the opportunities for this type of work are so frequent and so desirable that industrial physics is being increasingly recognized as a profession in the same sense that medicine, law and engineering are professions.

In research laboratories, industrial physicists cooperate with chemists and engineers in the solution of a variety of problems for which answers must be found before production is possible. In the glass industry they may work on the optical or mechanical properties of glasses; in the textile industry on the color or tensile strength of cotton or silk fibers; in the automotive industry on ignition, illumination, prevention of noise, etc.; in the electrical industry on filaments for lamps, photoelectric cells, thermionic and x-ray tubes, etc. Their work often differs little from that of the development engineers except that industrial physicists are expected to be more familiar with fundamental physical principles and their applications. In all cases they are primarily interested in improving old methods and processes or in replacing them by superior ones. They prepare for technological advances.

The Curriculum in Engineering Physics is arranged to meet the needs of students preparing for this type of research work. In it emphasis is laid on fundamental physics, chemistry and the elements of engineering. Electives allow the curriculum to be adapted to special interests and aptitudes. Since it is impossible to prepare properly for the profession of industrial physicist in the short period of four years, those interested in this curriculum are advised to remain in the University for a year of graduate work in physics, mathematics, chemistry and the engineering sciences. A variety of opportunities for employment should then begin to present themselves.

ALPHEUS W. SMITH.

CIVIL ENGINEERING

THE call for civils—which last year employed all graduates and also all undergraduates in the department—are of surprising variety as shown by letters on file in Brown Hall.

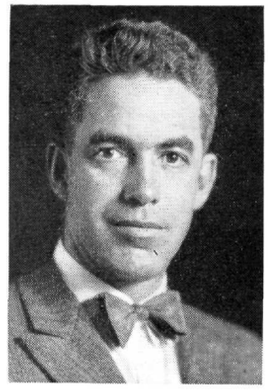
These calls represent only a part of the demand, because the immense public works are represented by circulars of examinations to be held. Great conservancy projects, flood control, hydro-electric and others, call for more civil engineers than any others in national, state, and local governments. Especially attractive is the corps of engineers of the Army, and the corps of civil engineers in the Navy.

Contracting, construction of all kinds, sales engineering, insurance engineering, sanitary, highway, geodetic, topographic, and railroad engineering are some of the fields employing civils. Graduates of the department have been very successful in all.

Although a broad foundation is laid for the foregoing specialties, the department aims to rapidly qualify its students for practical usefulness, and does this by summer camps or contracts exceeding in scope that attempted at any other university.

CHRISTOPHER E. SHERMAN.

MECHANICAL ENGINEERING



MOST of us have to devote a large portion of our working hours to the job of making a living. It is essential that these hours be spent in a congenial manner if we are to obtain the maximum of satisfaction out of life. The man who spends his working hours in activities which do not seem worth while or which are drudgery for him, is indeed in a pathetic situation. It is therefore important that a young man give careful study to his decision as to the life work for which he will prepare himself.

In general, engineering is based on the physical sciences. If one is to be happy and successful in engineering, he should be interested and reasonably proficient in such things as mathematics, physics, and chemistry, and in their application to various kinds of physical problems. If, in addition, he is interested in machinery, his suitability for mechanical engineering is indicated, since that is the branch of engineering which deals particularly with moving machinery of all kinds, and with power production and utilization.

However, it should be pointed out that mechanical engineering, or engineering in general for that matter, is not an easy way to make a living. Long hours of hard concentrated work, both while preparing for the profession and while practicing it, are required, and the monetary returns are probably less than in some other fields of activity. The reward must come largely from the satisfaction of accomplishment, from the joy of the work itself.

A young man who measures success by such standards rather than in terms of big money, who has suitable native abilities, and who is not afraid of hard work, should find a happy life in the field of mechanical engineering.

FRANKLIN W. MARQUIS.